

## CLAIMS

1. A fractal structure having a plurality of regions different in fractal dimension characterizing the self-similarity, comprising:

said fractal structure being grown from one or more origins under growth conditions providing a first fractal dimension in a portion of the growth process from the start point of time of growth to a first point and under growth conditions providing a second fractal dimension in another portion of the growth process from said first point of time to a second point of time.

2. A fractal structure according to claim 1 wherein said fractal structure is controlled in nature of phase transition occurring therein by adjustment of the timing for changing said growth conditions.

3. A fractal structure according to claim 1 wherein said fractal structure is controlled in critical temperature for ferromagnetic phase transition occurring therein by adjustment of the timing for changing said growth conditions.

4. A fractal structure according to claim 1 wherein said fractal structure is controlled in nature of a chaos appearing therein by adjustment of the timing for changing said growth conditions.

5. A fractal structure according to claim 1 wherein said fractal structure is controlled in nature of a quantum chaos in an electron state appearing therein by adjustment of the timing for changing said growth conditions.

6. A fractal structure according to claim 5 wherein said quantum chaos in the electron state is controlled by addition of a magnetic impurity.

7. A fractal structure according to claim 1 wherein said regions are nebula-like as a whole.

8. A fractal structure according to claim 1 wherein  $D_{f1} > 2.7$  and  $D_{f2} < 2.3$  are satisfied where  $D_{f1}$  is said first fractal dimension and  $D_{f2}$  is said second fractal dimension.

9. A fractal structure according to claim 1 wherein  $2.7 < D_{f1} \leq 3$  and  $1 \leq D_{f2} < 2.3$  are satisfied where  $D_{f1}$  is said first fractal dimension and  $D_{f2}$  is said second fractal dimension.

10. A fractal structure according to claim 1 wherein  $2.9 \leq D_{f1} \leq 3$  and  $1 \leq D_{f2} < 2.3$  are satisfied where  $D_{f1}$  is said first fractal dimension and  $D_{f2}$  is said second fractal dimension.

11. A fractal structure forming method for forming a fractal structure having a plurality of regions different in fractal dimension characterizing the self-similarity, comprising:

growing said fractal structure from one or

more origins under growth conditions providing a first fractal dimension in a portion of the growth process from the start point of time of growth to a first point and under growth conditions providing a second fractal dimension in another portion of the growth process from said first point of time to a second point of time.

12. A fractal structure forming method according to claim 11 wherein the timing for changing said growth conditions is adjusted to control phase transition occurring in said fractal structure.

13. A fractal structure forming method according to claim 11 wherein the timing for changing said growth conditions is adjusted to control critical temperature for ferromagnetic phase transition occurring in said fractal structure.

14. A fractal structure forming method according to claim 11 wherein the timing for changing said growth conditions is adjusted to control the nature of a chaos appearing in said fractal structure.

15. A fractal structure forming method according to claim 11 wherein the timing for changing said growth conditions is adjusted to control a quantum chaos in an electron state appearing in said fractal structure.

16. A fractal structure forming method according to claim 15 wherein a magnetic impurity is added to control said quantum chaos in the electron

state.

17. A fractal structure forming method  
according to claim 11 wherein  $D_{f1} > 2.7$  and  $D_{f2} < 2.3$  are  
satisfied where  $D_{f1}$  is said first fractal dimension and  
5  $D_{f2}$  is said second fractal dimension.

18. A fractal structure forming method  
according to claim 11 wherein  $2.7 < D_{f1} \leq 3$  and  $1 \leq D_{f2} < 2.3$   
are satisfied where  $D_{f1}$  is said first fractal dimension  
and  $D_{f2}$  is said second fractal dimension.

19. A fractal structure forming method  
according to claim 11 wherein  $2.9 \leq D_{f1} \leq 3$  and  $1 \leq D_{f2} < 2.3$   
are satisfied where  $D_{f1}$  is said first fractal dimension  
and  $D_{f2}$  is said second fractal dimension.